

What is claimed is:

1. A fuel supply system for an internal combustion engine comprising:
  - a plurality of fuel discharge devices in which the pressure of fuel to be discharged therefrom can be adjusted due to an increase and a decrease in the amount of the fuel discharged when said fuel discharge devices are in operation, and the discharge of fuel therefrom can also be stopped;
  - a fuel pressure reducing device that reduces the fuel pressure raised by said fuel discharge devices; and
  - a fuel pressure adjusting section that changes the number of operations of said fuel discharge devices and the amount of fuel discharged from each of said fuel discharge devices in such a manner that an average value of the fuel pressure from after the fuel pressure has once been raised until the fuel pressure is again raised becomes substantially constant before and after the number of operations of said fuel discharge devices is changed.
2. The fuel supply system for an internal combustion engine as set forth in claim 1, wherein said fuel pressure reducing device comprises a fuel injection valve for injecting the fuel; and said fuel pressure adjusting section determines the amount of fuel discharged from said fuel discharge devices based on the fuel pressure before the discharge of fuel by said fuel discharge devices, the number of operations of said fuel discharge devices, and the number of fuel injections by said fuel injection valve during the time from after the fuel pressure has once been raised until the fuel pressure is again raised.
3. The fuel supply system for an internal combustion engine as set forth in claim 1 or 2, wherein when the number of operations of said fuel discharge devices is increased, said fuel pressure adjusting section starts the discharge of fuel from at least one of stopped fuel discharge devices after the amount of fuel discharged from each of operating fuel discharge devices is decreased.
4. The fuel supply system for an internal combustion engine as set forth in claim 1 or 2, wherein when the number of operations of said fuel discharge devices is decreased, said fuel pressure adjusting section stops the discharge of fuel from at least one of operating fuel discharge devices after the amount of

fuel discharged from each of the other operating fuel discharge devices is increased.

5. The fuel supply system for an internal combustion engine as set forth in claim 1 or 2, wherein when the number of operations of said fuel discharge devices is increased or decreased, said fuel pressure adjusting section gradually changes the amount of fuel discharged from each of said fuel discharge devices.

6. The fuel supply system for an internal combustion engine as set forth in claim 1 or 2, further comprising a fuel discharge amount feedback control section that controls the amount of fuel discharged from each of said fuel discharge devices, wherein when the number of operations of said fuel discharge devices is increased, said fuel discharge amount feedback control section applies an amount of fuel to be discharged, which is determined based on a feedback control value before the increase in the number of operations of said fuel discharge devices, only to those of said fuel discharge devices which have been operating before the increase in the number of operations of said fuel discharge devices.

7. A fuel supply system for an internal combustion engine comprising:  
a plurality of fuel discharge devices in which the pressure of fuel to be discharged therefrom can be adjusted due to an increase and a decrease in the amount of the fuel discharged when said fuel discharge devices are in operation, and the discharge of fuel therefrom can also be stopped;

a fuel pressure reducing device that reduces the fuel pressure raised by said fuel discharge devices;

a fuel pressure detector that detects the pressure of fuel discharged from said fuel discharge devices; and

a fuel discharge amount adjusting section that changes the amount of fuel discharged from each of said plurality of fuel discharge devices in such a manner that an average value of the fuel pressure detected by said fuel pressure detector during the time from after the fuel has once been pressurized by one of said fuel discharge devices until the fuel is again pressurized by another one of said fuel discharge devices becomes

substantially constant.

8. The fuel supply system for an internal combustion engine as set forth in claim 7, wherein said fuel discharge amount adjusting section controls the amount of fuel discharged from each of said fuel discharge devices in a feedback manner such that the fuel pressure detected by said fuel pressure detector becomes a target fuel pressure.

9. The fuel supply system for an internal combustion engine comprising:  
a plurality of fuel discharge devices that discharge fuel;  
a plurality of fuel injection devices that inject the fuel pressurized by said fuel discharge devices;  
a fuel supply pipe having one end thereof branched to be connected with said plurality of fuel discharge devices, and the other end thereof provided with one outlet; and

fuel delivery pipes branching from the one outlet of said fuel supply pipe so as to be connected with said plurality of fuel injection devices.

10. The fuel supply system for an internal combustion engine as set forth in claim 9, wherein said plurality of fuel discharge devices successively discharge fuel into said fuel supply pipe at a constant interval between the discharge of fuel by one of said fuel discharge devices and the discharge of fuel by another one of said fuel discharge devices.

11. The fuel supply system for an internal combustion engine as set forth in claim 9, wherein said plurality of fuel discharge devices comprises a first fuel discharge device and a second fuel discharge device; and the discharge of fuel into said fuel supply pipe by said first fuel discharge device and the discharge of fuel into said fuel supply pipe by said second fuel discharge device are alternately carried out at a constant interval.

12. The fuel supply system for an internal combustion engine comprising:  
a low pressure fuel pump that discharges fuel at a low pressure; and  
a plurality of high pressure fuel pumps that further raise the pressure of fuel discharged from said low pressure fuel pump;  
wherein at least one of said high pressure fuel pumps serves, when stopped, as a fuel passable pump that can pass therethrough the fuel

discharged from said low pressure fuel pump, and when said internal combustion engine is started, at least one of said high pressure fuel pumps is stopped in its operation to serve as a fuel passable pump, and at the same time at least another one of said high pressure fuel pumps is driven to operate.

13. The fuel supply system for an internal combustion engine as set forth in claim 12, wherein when the rotational speed of said internal combustion engine increases up to a prescribed speed at the time of engine starting, said at least one high pressure fuel pump serving as a fuel passable pump starts to raise the pressure of fuel discharged from said low pressure fuel pump.

14. The fuel supply system for an internal combustion engine as set forth in claim 13, wherein in at least one of said high pressure fuel pumps that does not serve as a fuel passable pump but raise the pressure of fuel discharged from said low pressure fuel pump during the starting of said internal combustion engine, the amount of fuel discharged from said at least one high pressure fuel pump until the rotational speed of said internal combustion engine increases to said prescribed speed is more than the amount of fuel discharged from said at least one high pressure fuel pump after the rotational speed of said internal combustion engine has increased to said prescribed speed.